

Claims

We claim:

1. A method for generating a curve on a surface, comprising:
selecting a parameterization of the surface, wherein the parameterization
5 corresponds to a parameter space;
selecting a first curve in the parameter space;
determining a re-parameterization of the surface based on a metric of the surface;
and
mapping the first curve in the parameter space onto the surface based on the re-
10 parameterization, to generate the curve;
wherein the curve is useable in analyzing the surface.
2. The method of claim 1, further comprising:
generating output comprising the generated curve on the surface.
- 15 3. The method of claim 1,
wherein the first curve is a Low Discrepancy Curve in the parameter space; and
wherein the generated curve is a Low Discrepancy Curve on the surface.
- 20 4. The method of claim 1, wherein the parameter space comprises a 2D
rectangle.
5. The method of claim 1, wherein the parameter space comprises one of a
unit square, a unit cube, or a unit hyper-cube.
- 25 6. The method of claim 1, wherein the parameter space comprises a unit n-
dimensional cube, wherein the dimensionality n is greater than 4.

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7. The method of claim 1, wherein the metric of the surface is a Riemannian metric.

8. The method of claim 1, wherein the surface comprises a space with
5 dimensionality greater than two.

9. The method of claim 1,
wherein the surface comprises a six-dimensional space comprising three position
degrees of freedom and three orientation degrees of freedom for an object; and
10 wherein the generated curve comprises a scan path useable in scanning the space.

10. The method of claim 9, further comprising:
scanning the space, wherein said scanning the space is performed to determine an
optimum position and orientation for the object.

15 11. A method for generating a curve on a surface of an object, comprising:
selecting a parameterization of the surface, wherein the parameterization
corresponds to a parameter space;
selecting a first curve in the parameter space;
20 determining a re-parameterization of the surface based on a metric of the surface;
and
mapping the first curve in the parameter space onto the surface based on the re-
parameterization, to generate the curve;
wherein the curve is useable in analyzing the object.

25 12. The method of claim 11, further comprising:
generating output comprising the generated curve on the surface.

13. The method of claim 11, further comprising:

analyzing the object using the curve.

14. The method of claim 11, further comprising:
determining a property of the object using the curve.

15. The method of claim 1,
wherein the first curve is a Low Discrepancy Curve in the parameter space; and
wherein the generated curve is a Low Discrepancy Curve on the surface.

16. The method of claim 1, wherein the parameter space comprises a 2D rectangle.

17. The method of claim 1, wherein the parameter space comprises one of a unit square, a unit cube, or a unit hyper-cube.

18. The method of claim 1, wherein the parameter space comprises a unit n-dimensional cube, wherein the dimensionality n is greater than 4.

19. The method of claim 1, wherein the metric of the surface is a Riemannian metric.

20. The method of claim 1, wherein the surface comprises a space with dimensionality greater than two.

21. A memory medium which is operable to store program instructions for generating a curve on a surface, wherein said program instructions are executable to perform:

storing a parameterization of the surface, wherein the parameterization corresponds to a parameter space;

storing a first curve in the parameter space;
determining a re-parameterization of the surface based on a metric of the surface;
and
mapping the first curve in the parameter space onto the surface based on the re-
parameterization, to generate the curve;
wherein the curve is useable in analyzing the surface.

22. The memory medium of claim 21, wherein the program instructions are further executable to perform:

generating output comprising the generated curve on the surface.

23. The memory medium of claim 21,
wherein the first curve is a Low Discrepancy Curve in the parameter space; and
wherein the generated curve is a Low Discrepancy Curve on the surface.

24. The memory medium of claim 21, wherein the parameter space comprises one of a 2D rectangle, a unit square, a unit cube, or a unit hyper-cube.

25. The memory medium of claim 21, wherein the parameter space comprises a unit n-dimensional cube, wherein the dimensionality n is greater than 4.

26. The memory medium of claim 21, wherein the metric of the surface is a Riemannian metric.

27. The memory medium of claim 21, wherein the surface comprises a space with dimensionality greater than two.

28. The memory medium of claim 21,
wherein the surface comprises a surface of an object;

generating output comprising the generated curve on the surface.

32. The system of claim 30,

wherein the first curve is a Low Discrepancy Curve in the parameter space; and

5 wherein the generated curve is a Low Discrepancy Curve on the surface.

33. The system of claim 30, wherein the parameter space comprises one of a

2D rectangle, a unit square, a unit cube, a unit hyper-cube, or a unit n-dimensional cube,
wherein the dimensionality n is greater than 4.

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34. The system of claim 30, wherein the metric of the surface is a Riemannian

metric.

35. The system of claim 30, wherein the surface comprises a space with

15 dimensionality greater than two.

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